



**U.S. House of Representatives**  
**Committee on Transportation and Infrastructure**

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Washington, DC 20515

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July 6, 2012

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**MEMORANDUM**

TO: Members, Subcommittee on Coast Guard & Maritime Transportation  
FROM: Staff, Subcommittee on Coast Guard & Maritime Transportation  
RE: Hearing on "A Review of Federal Maritime Domain Awareness Programs"

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**PURPOSE**

On Tuesday, July 10, 2012, at 10:00 a.m., in room 2167 of the Rayburn House Office Building, the Subcommittee on Coast Guard & Maritime Transportation will meet to review the implementation of programs by the Coast Guard to collect, analyze, and disseminate information used to assess and respond to safety and security threats in the maritime domain.

**BACKGROUND**

**Maritime Domain Awareness (MDA)**

Maritime domain awareness (MDA) is the federal government's effort to achieve an understanding of anything in the global maritime environment that can affect the security, safety, economy, or environment of the United States. The process of achieving MDA includes: (1) collection of information, (2) fusion of information from different sources, (3) analysis through the evaluation and interpretation of information, and (4) dissemination of information to decision makers, with the goal of identifying risks and threats in a timely manner.

To improve coordination and help guide the development and implementation of MDA programs by federal government agencies, President George W. Bush released the National Plan to Achieve Maritime Domain Awareness in October 2005. It is one of eight plans developed in support of the National Strategy for Maritime Security, as directed by National Security Presidential Directive-41/Homeland Security Presidential Directive-13. The plan outlines the national priorities for achieving maritime domain awareness and establishes an interagency coordination office to guide agencies in executing their MDA programs.

## Information Collection

The Coast Guard is in the process of acquiring new technology and implementing new or revised programs to improve the collection of information to achieve MDA. Below is a summary of some of the Service's larger programs to improve information collection:

### *Automatic Identification System (AIS):*

Automatic Identification System (AIS) is an internationally adopted Very High Frequency (VHF)-based, short-range communication system which provides a means for vessels to electronically exchange data, including identification, position, course, and speed, with other nearby vessels and shore-based AIS receivers. Depending on signal strength, weather, geography, and receiver capability, AIS signals can generally be received up to 50 miles away.

Under amendments to the International Convention for the Safety of Life at Sea (SOLAS) adopted in December 2002, vessels over 300 gross tons are required to carry AIS. Section 102 of the Maritime Transportation Security Act of 2002 (MTSA) (46 U.S.C. 70114) requires certain commercial vessels operating in U.S. waters to carry AIS. In October 2003, the Coast Guard finalized its rule implementing the AIS carriage requirements (33 C.F.R. Part 164.46). The rule requires AIS on the following commercial vessels on international voyages:

- Commercial vessels greater than 300 gross tons;
- Passenger vessels larger than 150 gross tons;
- Tankers regardless of tonnage;
- Towing vessels of 26 feet or more in length and more than 600 horsepower; and
- All other self-propelled vessels greater than 65 feet, other than fishing and passenger vessels.

The final rule also requires the following vessels to carry AIS when operating in one of 12 Coast Guard administered Vessel Traffic Service areas throughout the U.S.:

- Self-propelled vessels greater than 40 meters (131 feet);
- Towing vessels greater than eight meters (26 feet); and
- Passenger vessels certificated to carry more than 50 passengers.

On December 16, 2008, the Coast Guard published a Notice of Proposed Rulemaking (NPRM) (RIN 1625-AA99) to amend the current AIS regulations to expand AIS carriage requirements to vessels operating on all U.S. navigable waters, and require AIS carriage for additional commercial vessels, including:

- Fishing vessels 65 feet or greater;
- Towing vessels greater than 26 feet in length regardless of engine horsepower;
- Commercial vessels carrying 50 or more passengers;
- Hi-speed passenger vessels carrying more than 12 passengers;
- Dredges and floating plants operating in or near channels; and

- Vessels carrying certain dangerous cargo.

The Coast Guard estimates the 10-year total cost of the proposed rule to U.S. vessel and foreign-flagged vessel owners is between \$181 million and \$236 million, while the benefits in the form of reduced property damage could also total \$236 million. The NPRM would more than double the number of vessels currently tracked by the Service. The final rule is still under development by the Coast Guard.

#### *Nationwide Automatic Identification System (NAIS):*

The Coast Guard collects AIS signal data through its Nationwide Automatic Identification System (NAIS). NAIS consists of approximately 200 VHF receiver sites located along the coasts and inland river systems of the United States. NAIS allows the Coast Guard to collect data from AIS-equipped vessels in certain waters.

Currently, the Coast Guard uses NAIS to receive AIS data from vessels traveling in the vicinity of the nation's 58 largest ports. In the ports of Houston-Galveston and New Orleans, the Coast Guard is currently testing the next phase of the NAIS system, NAIS Increment 2. In addition to receiving AIS data, NAIS Increment 2 is capable of transmitting information to vessels approximately 24 miles from shore.

The Coast Guard initiated preliminary work to develop NAIS Increment 3, a satellite-based system that would provide the Service with the ability to receive AIS data from vessels operating over 2,000 miles from shore. The goal was to have a system in operation by 2010. In 2008, the Coast Guard worked with a commercial satellite provider to evaluate the feasibility of space-based AIS reception. It is currently not clear whether the Coast Guard intends to continue the development of NAIS Increment 3. No funding has been included in the Coast Guard's Capital Improvement Plan for NAIS Increment 3.

The President requested \$6 million for NAIS in the FY 2013 budget for the Coast Guard, \$1 million more than the FY 2012 enacted level. The Service intends to use this funding to replace temporary AIS hardware and infrastructure in four ports (Corpus Christi, TX; Albany, NY; Port of NY/NJ; and New Haven, CT) with permanent hardware and infrastructure.

#### *Long Range Identification and Tracking (LRIT):*

Long Range Identification and Tracking (LRIT) is a worldwide, satellite-based automated tracking system for vessels subject to SOLAS regulation (vessels on international voyages with 12 or more passengers or over 300 gross tons). Section 102 of MTSA required the Coast Guard to establish a long range tracking system, and the Safety and Accountability for Every Port (SAFE Port) Act (46 U.S.C. 70115) set an April 1, 2007 deadline for its implementation. Amendments to SOLAS were adopted in May 2006 to require all SOLAS-regulated vessels to carry LRIT. The system became operational on December 31, 2008.

Unlike AIS, LRIT is intended to be a secure system in which data transmissions are made in a protected format to data centers which distribute them to countries permitted to have the

information. This system allows SOLAS Contracting Governments access to flag, port, and coastal state LRIT information as necessary.

As a Contracting Government, the U.S. through the Coast Guard has developed a National Data Center to collect, request, receive, and distribute data within the LRIT system. The LRIT system provides information on vessel identity and position every six hours. The LRIT system allows the Coast Guard to receive information on:

- all U.S. flagged vessels anywhere in the world;
- vessels within 1,000 nautical miles of US territory; and
- all vessels bound for a U.S. port regardless of location.

*Notice of Arrival and Departure (NOAD):*

Section 4(a)(5) of the Ports and Waterways Safety Act of 1972 (33 U.S.C. 1223) authorizes the Coast Guard to require vessels bound for U.S. ports to file notices of arrival before arriving. Prior to the terrorist attacks of September 11, 2001, vessels over 300 gross tons submitted 24 hours before arriving notices of arrival directly to Coast Guard and Customs officials in the port of arrival. On October 4, 2001, the Coast Guard issued a temporary final rule (33 C.F.R. Part 160) to increase the submission time to 96 hours, expand the notice of arrival to include passenger, crew, and cargo manifest information, and require all data to be sent to a centralized Coast Guard data center.

On December 16, 2008, the Coast Guard published a NPRM (RIN 1625-AA99) to eliminate the 300 gross ton threshold and require passenger, crew, and cargo manifest information be submitted 96 hours before any foreign flagged vessel arrives at, or departs from, a U.S. port. The NPRM would also require 96 hour advance notice before any U.S.-flagged vessel arrives at a U.S. port. The final rule is still under development by the Coast Guard.

*Rescue 21:*

Rescue 21 is the Coast Guard's advanced distress call monitoring and response system built to replace the obsolete National Distress Response System (NDRS). NDRS was established in the 1970's as a VHF-FM-based radio communication system which had a range of up to 20 nautical miles along most of the U.S. shoreline. By the 1990's NDRS consisted of out-of-date and non-standard equipment with many limitations, including: no direction finding capability; numerous geographic communication coverage gaps; limited interoperability with other emergency response services; and single-channel radio operation, which prohibits the ability to receive multiple radio calls. Rescue 21 overcomes these problems by providing direction finding capability for VHF distress calls, interoperability with first responders, and Digital Selective Calling (DSC). Rescue 21 also closes coverage gaps along the coast of the continental United States.

In September 2002, the Coast Guard awarded a \$611 million contract to General Dynamics C4 Systems to begin work on Rescue 21. The work was supposed to be complete by September 2006. In May 2012, the Coast Guard completed installation work in Guam, the last

Coast Guard sector to receive the Rescue 21 system. Due to geographic and cost related issues, the Coast Guard no longer intends to install the Rescue 21 system in Alaska or along the Mississippi and Missouri River system. Instead, both areas will receive upgrades to the legacy NDRS system which will improve reliability and provide DSC capability. The Service has spent over \$1 billion to acquire Rescue 21.

The President did not request any funding for Rescue 21 in FY 2013. The Service expects to use previously appropriated funds to conduct work in FY 2013 to upgrade the legacy system in Alaska and the along the Mississippi and Missouri River system.

*Other Collection Sources:*

The Coast Guard also collects and shares information on the maritime domain through its day-to-day operations, intelligence programs, open source information, and agreements with other federal agencies, state and local governments, and the private sector. For instance, the Coast Guard has an agreement with the National Oceanic and Atmospheric Administration (NOAA) to receive Vessel Monitoring System (VMS) data from certain commercial fishing vessels required to carry the system. VMS provides the position and identification of certain commercial fishing vessels through a satellite-based system the Coast Guard uses for fisheries enforcement activities and to respond to search and rescue cases.

**Fusion, Analysis, and Dissemination**

Once information on the MDA is collected, it must be fused together and analyzed before being disseminated to decision makers for potential action. The Coast Guard uses the following programs and infrastructure to accomplish these tasks:

*Intelligence Coordination Center (ICC):*

The Coast Guard Intelligence Coordination Center (ICC) coordinates and integrates the collection, analysis, production, and dissemination of Coast Guard intelligence. The ICC provides all-source, tailored, and integrated intelligence to the Coast Guard Commandant, senior decision makers, and field commanders, as well as to the Department of Homeland Security (DHS), Department of Defense Combatant Commanders, other military and intelligence services, and civilian agencies. The ICC is collocated with the Navy and Marine Corps intelligence units at the National Maritime Intelligence Center in Suitland, Maryland.

*Maritime Intelligence Fusion Center (MIFC):*

The Coast Guard also operates Maritime Intelligence Fusion Centers (MIFCs) at its Atlantic and Pacific Area Commands. The MIFCs provide the Coast Guard and other maritime partners with intelligence analysis to support a wide range of maritime missions. MIFCs fuse real-time information fed from Coast Guard field units with other intelligence to produce a complete tactical intelligence picture and enhance situational awareness for area decision makers.

*Interagency Operations Center (IOC):*

Section 108 of the SAFE Port Act (46 U.S.C. 70107A) required DHS to establish Interagency Operations Centers (IOCs) in high priority ports by October 2009. IOCs were intended to bring together federal, state, and local regulatory, law enforcement, and intelligence authorities into a single command center at each of the nation's high priority ports. The intended goal was to improve coordination of activities, reduce operating costs, and enhance information and intelligence sharing.

To date, IOCs have been established at ports in Charleston, SC; Hampton Roads, VA; Jacksonville, FL; Detroit, MI; San Francisco, CA; San Diego, CA; Puget Sound, WA; and New York/New Jersey. Although space has been built to accommodate personnel from federal, state and local agencies, many of the facilities are now primarily staffed by Coast Guard personnel. The Coast Guard has informed Subcommittee staff that IOC partner agencies have not been able to provide dedicated staffing at IOCs due to budget constraints. The Coast Guard is now turning to "virtual IOCs" as a way to ensure better coordination and information sharing.

To build the "virtual IOC's", the Coast Guard relies upon a software program called WatchKeeper. This program allows IOC partner agencies to share information and coordinate port operations. To date, WatchKeeper software has been activated in 18 Coast Guard sectors. The Coast Guard expects to deploy WatchKeeper at the 17 remaining Coast Guard sectors by 2014.

The President did not request any funding for the Interagency Operations Center (IOC) in FY 2013. The Coast Guard intends to use previously appropriated funds to continue the deployment of WatchKeeper to the remaining high priority ports.

**MDA Related Initiatives**

*Command, Control, Communication, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR):*

As part of the Coast Guard's ongoing 25 year, \$29 billion recapitalization of its legacy fleet of cutters and aircraft, the Service is also upgrading the Command, Control, Communication, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) system on these assets and at shore installations. The C4ISR program is comprised of a core software and hardware suite for each Coast Guard asset that integrates sensors, communications systems, and intelligence information into a common operating picture. The program's goal is to deliver a C4ISR-equipped asset which can collect and process MDA information from a variety of inputs, such as surface or air search radars, friend or foe identification systems, AIS, and other sources and integrate it onto a user-defined common operating picture.

The Coast Guard is currently in the process of developing and deploying C4ISR Segment 2. Segment 2 replaces a proprietary software system owned and installed by private contractors under the former Integrated Deepwater System contract on certain air and surface assets, with a new, open source system owned and controlled by the Coast Guard. Segment 2 is being

deployed on the Service's National Security Cutter, HC-144A Maritime Patrol Aircraft, and C-130J Long Range Surveillance Aircraft.

The President requested \$40.5 million for C4ISR in FY 2013, \$2 million (or 5 percent) more than the FY 2012 enacted level. The Coast Guard includes \$40.5 million for each of the next five fiscal years in its Capital Improvement Plan for C4ISR. At this level of funding, the Service expects to continue to deploy and maintain Segment 2 on additional assets.

#### *Small Vessel Security:*

Small vessels are generally defined as those less than 300 gross tons. They include over 12 million registered recreational boats, small towing vessels, charter boats, and as many as 20 million small watercraft which are currently not registered by federal, state, or local governments. Historically, the federal government has been primarily concerned with tracking and ensuring the safety and security of passenger vessels and large commercial vessels. However, in response to concern over the security threat posed by small vessels, the Coast Guard recently began a review of ways to improve the situational awareness of these vessels.

In April 2008, DHS released the Small Vessel Security Strategy to address the security risks posed by small vessels. The goals of the Small Vessel Security Strategy are to:

- develop and leverage a strong partnership with the small vessel community and public and private sectors in order to enhance maritime domain awareness;
- leverage technology to enhance the ability to detect, infer intent, and when necessary, interdict small vessels that pose a maritime security threat; and
- enhance cooperation among international, federal, state, local, and tribal partners and the private sector (e.g., marinas, shipyards, small vessel and facility operators).

In January 2011, DHS released the Small Vessel Security Strategy Implementation Plan. The Plan is intended to provide guidance to interagency stakeholders on ways to implement the Small Vessel Security Strategy "without imposing excessive limits or costs on our maritime community". The plan calls for the following:

- increased coordination and information sharing on small vessel risks and anomalies observed during normal agency operations;
- enhanced outreach to the public and the encouragement to report suspicious activity;
- potential areas of research and development on technologies to improve maritime domain awareness; and
- the exploration of new regulatory requirements on small vessel owners, such as requiring small vessels to carry AIS, expanding NOAD requirements to small vessels, and mandating that small vessel operators "complete an education course conforming to a national standard"

**WITNESSES**

Vice Admiral Peter V. Neffenger  
Deputy Commandant for Operations  
United States Coast Guard